

WT
2131106

PACKAGING SUBSTRATE AND MANUFACTURING METHOD THEREOF,
INTEGRATED CIRCUIT DEVICE AND MANUFACTURING METHOD THEREOF,
AND SAW DEVICE

This is a division of application 10/298,228 filed
5 ON 11/18/2002.

Background of the Invention:

The present invention relates to a packaging substrate and a manufacturing method thereof, an integrated circuit device and a manufacturing method thereof, and an SAW device, in particular to a technique effectively applicable to the packaging substrate on which an integrated circuit element is mounted by flip-chip bonding, a technique effectively applicable to the integrated circuit device that an integrated circuit element is hermetically sealed on the packaging substrate, a technique effectively applicable to the integrated circuit device that an integrated circuit element and the packaging substrate are coupled with each other by ultrasonic sound, and a technique effectively applicable to the SAW device which has a pair of resonators each having a shape of the teeth of a comb.

In the integrated circuit device that an integrated circuit element is mounted on the packaging substrate, a flip-chip method is considered as one of mounting methods thereof. In the flip-chip method, projecting electrodes are formed on element electrodes of the integrated circuit element, and then the projecting electrodes are directly coupled to substrate electrodes formed on a packaging substrate. Further, a wire-bonding method is also considered as another one of the mounting methods thereof. In the wire-bonding method, the integrated circuit element is coupled to the packaging substrate, and then the element electrodes of the integrated circuit element and the substrate electrodes of the packaging substrate are coupled to each other through wires.

Herein, in the wire-bonding method that a wire-bonding is carried out by the use of gold (Au) wiring, aluminum (Al) wiring, or the like, the substrate electrodes formed on the packaging substrate, in particular on the packaging

BEST AVAILABLE COPY